F·A·A·M facility for airborne atmospheric measurements

FLIGHT FOLDER

Flight No.:	B125
Date:	06 Sep 2005
Take Off	08:54:35
Landing:	13:46:23
Flight Time	4h51m48

Campaign: BBR Test flight
Operating Area: SW Approaches

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Ian Ramsay-Rae	Directflight
3	CCM	Jackie Mulholland	Directflight
4	Mission Scientist	Jamie Trembath	FAAM
5	Flight Manager	Maureen Smith	FAAM
6	Flight Manager Training	Ruth Purvis	FAAM
7	Filters / CCM2	Stuart Heath	FAAM
8	Filters Training	Alison Perry	FAAM
9			
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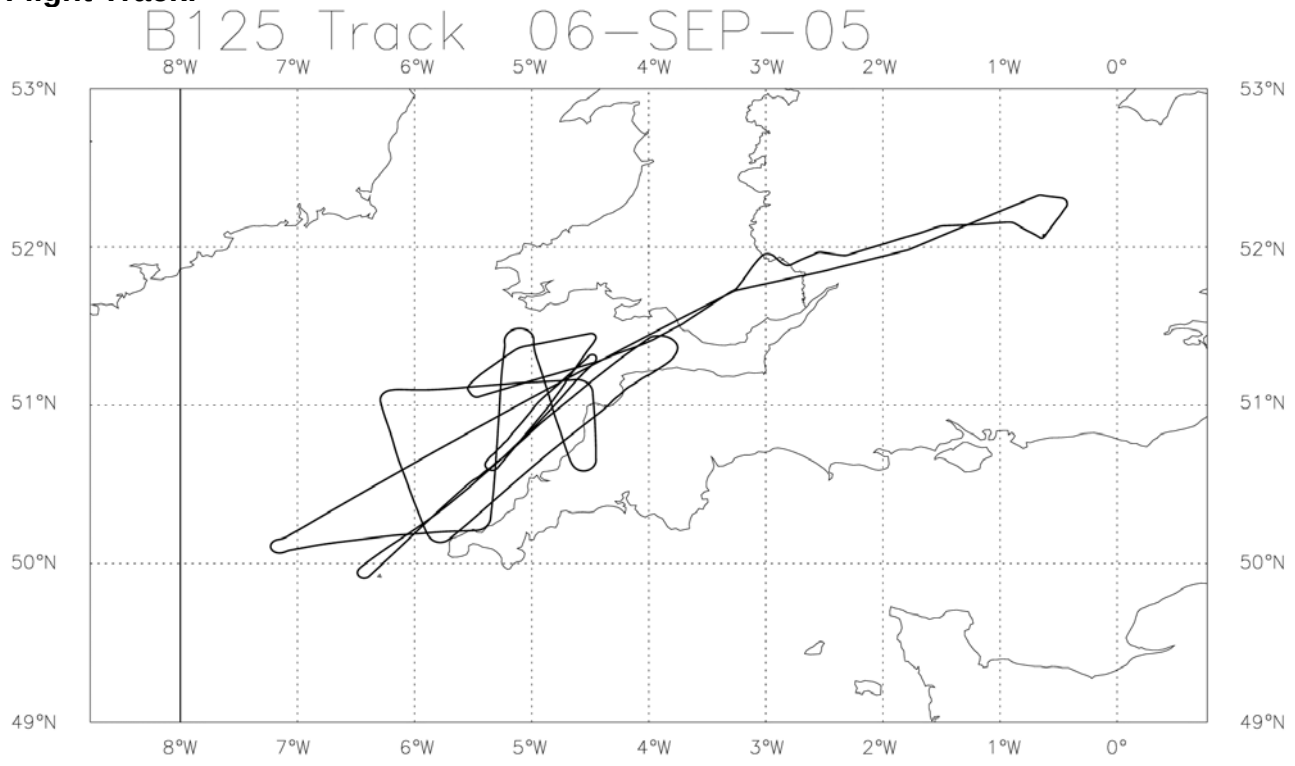
20			

Flight Track:

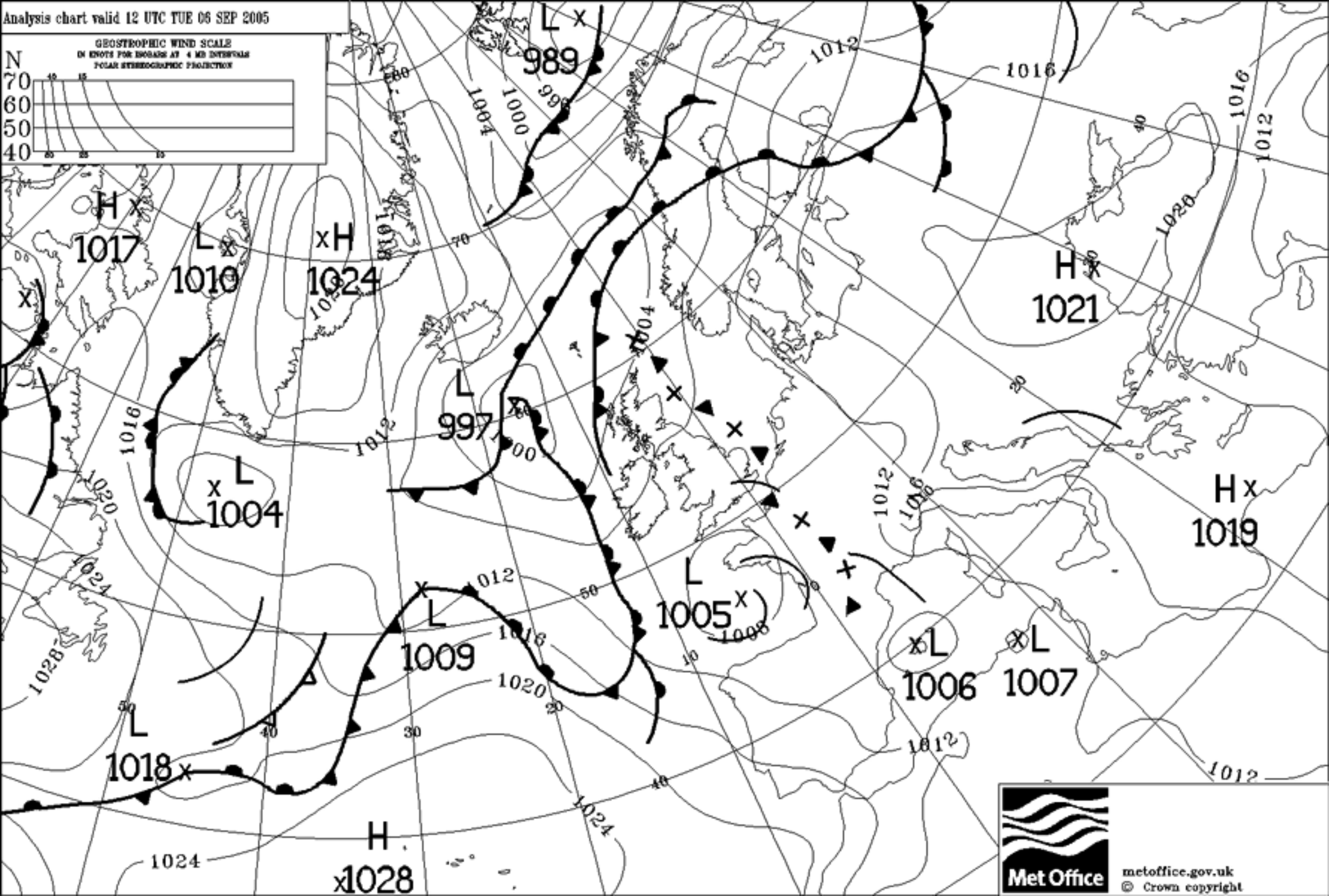


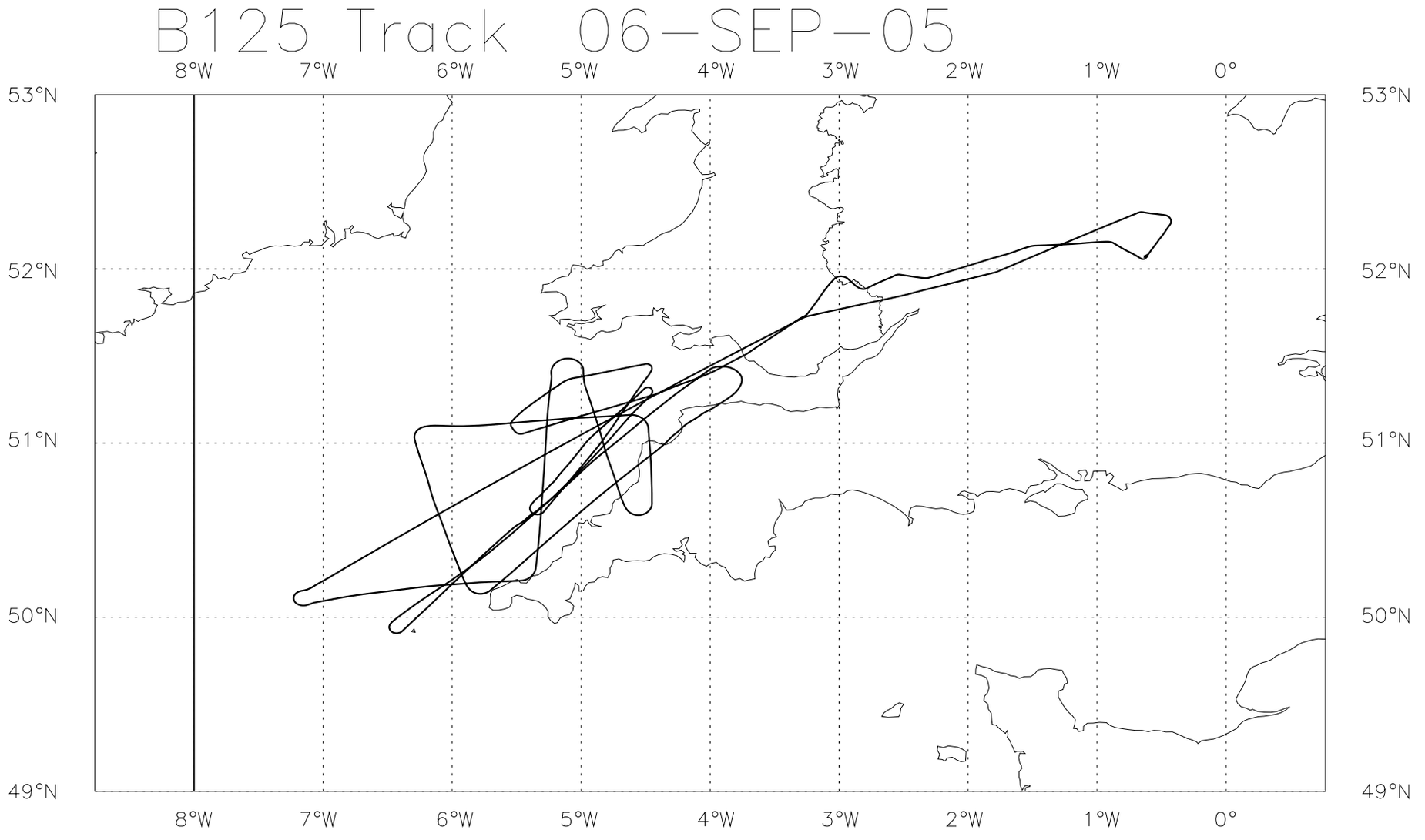
FLIGHT SUMMARY

Flight No b125
Date: 6/09/05
Project: BBR tests
Location: SW approach

Start Time	End Time	Event	Height (s)	Hdg	Comments
075056		Start posn	0.42 kft	127	52'04.36N, 0'37.48W
083037		INU	0.42 kft	127	Set to Navigate
085435		T/O	1.6 kft	305	Cranfield
092543		Videos	8.6 kft	234	Start UFC & DFC
093204	094216	Run 1	1.1 kft	242	1.0k' on Q1010mB
094607	095345	Run 2	2.1 kft	042	Above Cloud, 2.0k'
094716		LBBR	2.1 kft	048	Unplug Clr
094756		LBBR	2.1 kft	052	Reconnect Clr
094813		LBBR	2.1 kft	052	Unplug Red
094845		LBBR	2.1 kft	053	Reconnect Red
094911		LBBR	2.1 kft	053	Unplug IR
095004		LBBR	2.1 kft	054	Reconnect IR
095105		LBBR	2.1 kft	054	Unplug JO1D
095205		LBBR	2.1 kft	074	Reconnect JO1D
100001	101118	Run 3	8.5 kft	209	Above MBL cloud
101529		Yaw Right	10.0 kft	041	For LTI
101557		Yaw Left	10.1 kft	054	
101623		Yaw Right	10.0 kft	037	
101652		Yaw Left	10.1 kft	053	
101719		Yaw Right	10.1 kft	041	
101736		Yaw Left	10.1 kft	055	
101804		End Yaw	10.0 kft	033	
101821	102821	Run 4.1	10.0 kft	037	VScience
103012	103301	Run 4.2	10.0 kft	216	189-300KIAS
103106		Videos	10.0 kft	215	Change Tapes
103900		Yaw Right	17.0 kft	217	
103928		Yaw Left	17.1 kft	233	
103956		Yaw Right	17.0 kft	214	
104028		Yaw Left	17.1 kft	233	
104107		Yaw Right	17.0 kft	215	
104142		Yaw Left	17.1 kft	238	
104211		End Yaw	17.0 kft	219	
104231	105231	Run 5.1	17.0 kft	222	VScience
105521	105909	Run 5.2	17.0 kft	050	185- 302Kias
112217		Yaw Right	33.0 kft	231	
112301		Yaw Left	33.0 kft	233	
112320		Yaw Right	33.0 kft	223	
112348		Yaw Left	33.1 kft	237	
112428		Yaw Right	32.7 kft	214	
112457		Yaw Left	32.8 kft	228	
112525		End Yaw	32.6 kft	214	
112655	113655	Run 5.1	33.0 kft	226	VScience
113809		Videos	33.1 kft	314	Change tapes
Box Pattern					
Note: Slight turbulence at this level					
113902	114903	Run 5.2	33.0 kft	344	Down Sun
115028	115040	Run 5.3	33.0 kft	073	Across sun
115059	120059	Run 5.3	33.0 kft	084	Across Sun
120245	120649	Run 5.4	33.0 kft	173	Into Sun - Abort
120717			33.0 kft	208	Avoiding Action
121724	121957	Left Turn	33.0 kft	001	For LTI, 25deg bank
					Resume Box Pattern
122044	123045	Run 5.5	33.0 kft	184	Into Sun
123204	124204	Run 5.6	33.0 kft	271	Across Sun

124215	125940	Turn Left	33.0 kft	266	For LTI
125953	130141	Run 5.6	33.0 kft	056	230-180k for LTI
134623		Land	0.46 kft	355	Cranfield
135155		Stop posn	0.45 kft	309	52'04.36N, 0'37.50W




B125 Track 06-SEP-05
8°W
7°W
6°W
5°W
4°W
3°W
2°W
1°W
0°
53°N
52°N
51°N
50°N
49°N

Sortie Brief: B125 (Test)

Date : 06/09/05

Time: 10:00 (local) 09:00 (Zulu)

Location: South West Approaches

Sortie Aims: To undertake testing of the Broad-Band radiometers (BBR) and function of the Low Turbulence Inlet (LTI)

Sortie Summary: The sortie is to take place in the South West approaches.

Sortie Detail with approx timing

a) T+0 Take off Cranfield and transit to operational area (SW approaches) pilot preferred alt.

b) T+60 Descend to 1000ft for 10 min straight and level run in cloud free conditions. (note approx alt. of marine boundary cloud if possible)

c) T+85 Ascend looking for sheet of marine boundary cloud. Interrupt ascent to start 10min straight and level run 1000ft above cloud top.

d) T+100 Ascend to 10,000ft and start straight and level run for 10 mins. This run should start at V_{min} accelerating to V_{max} and decelerating to $V_{science}$ – 10 mins

e) T+120 Complete 3-6 yaw procedures (maximum possible) at same altitude at $V_{science}$ - 2 mins

f) T+125 Ascend to 17,000ft (or halfway between previous altitude and max altitude) and repeat points e) and f) - 12 mins

g) T+145 Ascend to max altitude and repeat points e) and f) – 12 mins

h) T+180 Start box pattern of 4 10 min straight and level runs orientated into, across, down and across sun. The box pattern should contain 2 left and 2 right turns. The order of this is irrelevant though cloud free conditions above are required. – 45 mins

i) T+225 Transit back to Cranfield

Mission Scientist's Debrief

Flight No : B125 **Date :06/09/2005** **Name :** Jamie Trembath

1. Assessment of the flight

Very good, all objectives were achieved. There was some discussion as to which bank of cloud was the marine boundary layer cloud. We did however, have enough time to over fly both though both appeared to be dissipating as we continued each run.
LTI alignment runs went well to, the order was slightly different to B124 as seen in the flight summary. There was some turbulence but all has been noted and could be useful.
The Box pattern for the BBR calibrations was well timed and had perfect weather conditions. There was one forced diversion but the run was rerun in full.

2. Summary of the weather conditions

The weather was good, the marine boundary layer cloud was present though dissipating around 11:00.
Perfect weather conditions for the BBR cals @ 33,000ft

Mission Scientist's Log

Flight No **B**...125..... Date .....06/09/2005.... Page ..1.... of .1...

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
09:26:00		5000	234		Digital pics taken of marine boundary layer cloud (Pic 1)
09:29:50		3000	234		Cloud bank altitude noted as passed approx. 3000ft
09:32:04	Run 1	1000	242	51.2N 4.3W	Run started, small broken clouds above and hazy
09:34:00	Run 1	1000	249	51.2N 4.5W	Small amount turbulence hdg change to miss Lundy
09:38:00	Run 1	1000	249	51.1N 4.8W	Very little clear sky above cloud bank noted below
09:42:16	Run 1	1000	248	51.0N 5.2W	End of run 1 climb to 2000ft to work lower cloud (see above point) though not thought to be BL cloud
09:46:06	Run2	2000	49	51.1N 5.4W	Working btwn 2 cloud banks 1 above 1 below
09:48:37	Run2	2000	53	51.2N 5.3W	Cloud rising (bubbling up), less than 1000ft above
09:50:05	Run2	2000	54	51.2N 5.2W	Cloud below becoming broken and has now run out
09:50:40	Run2	2000	54	51.2N 5.1W	Cloud bank 300ft below reappears clear above
09:51:23	Run2	2000	54	51.3N 5.1W	Cloud below now run out
09:32:40	Run2	2000	82	51.3N 4.9W	pics taken of the two cloud banks (Pic 2)
09:53:47	Run2	2000	80	51.3N 4.8W	Run ended in clear conditions
09:54					Climb to 8000ft to work upper cloud layer
09:59:59	Run 3	8500	209	51.2N 5.1W	Run started. Passed cloud at 7500 working at 8500ft
	Run 3	8500			Clear skies above, cloud layer worked is rising in distance. Coverage of cloud below not uniform
10:03:14	Run 3	8500	205	51.1N 4.6W	Distinct gaps in cloud layer below
10:06:40	Run 3	8500	211	50.9N 4.8W	Cloud layer we are working has now ended thought there are remnants of the cloud worked in run 2
10:08:16	Run 3	8500			Pics taken of the layer we were working (Pic 3)
10:11:18	Run 3	8500	211	50.7N 5.1W	End of this run, climb to 10,000ft to start LTI alignment work
10:23:20	Run 4.1	10000	38	50.8N 5.2W	Slight heading change during SLR
11:04:20	No run	24,500	50	50.5N 5.3W	Slight turbulence observed – clear skies
11:24:30	Run 5.1	33000	221	51.0N 4.2W	Slight turbulence observed
11:31:30	Run 5.1	33000			Slight turbulence observed approx 1min Note that the altitude of the aircraft was not stable during yawing manoeuvres, though velocity was.
11:39:03	Run 5.2	33000	343	50.2N 5.9W	Box pa started down sun solar Az 164.7 – clear skies
11:50:58	Run 5.3	33000	84	50.0N 6.1W	Across sun leg solar Az 167 – clear skies
11:53:34	Run 5.3	33000	82	51.0N 5.7W	Slight turbulence experienced
12:02:45	Run 5.4	33000	173	51.0N 4.4W	Into sun leg solar az 174 – clear skies
12:06:50	Run 5.4	33000	175	50.5N 4.4W	Interrupt into sun leg – avoidance action
12:20:44	Run 5.5	33000	184	51.2N 5.2W	Into sun leg started again solar az 180 – clear skies
12:32:05	Run 5.6	33000	273	50.1N 5.5W	Across sun leg soalr az 184 – clear skies
12:59:00	Run 5.7	33000	55		Turbulence for approx 1 min

Flight Manager's Instrument Status Log

Flight No. **B**125 Date: 06/09/05

Instrument	Fitted	Operated	Instrument	Fitted	Operated
Navigation			**Cloud Physics**		
INU		**Y**	**Probes**		
XR5M GPS		**Y**	FFSSP		**N**
Cruciform GPS	**Y**	**N**	PCASP		**N**
Satcom C		**Y**	2D-P		**N**
Satcom H		**Y**	2D-C		N
Thermometers			Cloudscope	**N**	**N**
De-Iced Temp		**Y**	SID 1	**Y**	**N**
Non De-Iced		**Y**	SID 2	**Y**	**N**
Heimann	**N**		HVPS	**N**	**N**
Hygrometers			CIP25	**Y**	**N**
G. Eastern		**Y**	CIP100	**Y**	**N**
J. Williams		**Y**			
Nevzorov		**Y**			
TWC	**Y**	**Y**			
FWVS	**Y**	**N**	**Racks:**		
Radiometers			INC	**N**	**N**
Upper Clear	**Y**	**Y**	CCN / CNC	**Y**	**Y**
" Red	**Y**	**Y**	CVI	**Y**	**N**
" Silicon	**Y**	**Y**			
" JO1D	**Y**	**Y**	**Aerosol**		
Lower Clear	**Y**	**Y**	PSAP	**Y**	**N**
" Red	**Y**	**Y**	Nephelometer	**N**	
" Silicon	**Y**	**Y**	Filters	**Y**	**Y**
" JO1D	**Y**	**Y**	AMS	**Y**	**N**
Large Radiometers					
TAFTS	**N**				
MARSS	**N**				
DEIMOS	**N**		**Others:**		
ARIES	**N**		NIR TDLAS	N	N
SWS	N		2BT O3	Y	N
Chemistry			VACC	Y	N
Ozone	Y	N	PEROXIDE	Y	N
SO2	Y	N	Formaldehyde	Y	N
NOX	Y	N	ADA	Y	N
CO	Y	N	CPI	Y	N
ORAC	Y	N	NOxy	Y	N
PAN	Y	N	PTRMS	Y	N
PERCA	N	N	Bag Sampling	Y	N
WAS	Y	N	Tube Sampling	Y	N

Faults / Incidents Log

Flight No. B125
Date: 06/09/05

Instruments

1. Upper Pyrgeometer – Zero signal following radiance signal channel.

2. Upward Facing Camera – Detritus or thread moving around between camera lens and window.

Aircraft

1. Intercom, Flight Managers box – couldn't transmit towards end of flight. Pressed buttons till it eventually came back up (about 2 minutes later).

2. Cabin door (port aft) – red light indication came on during return transit. Possible microswitch fault.

Satcom H Calls – FAAM x 1